

Implement & Tractor

Inventory reduction: How's it going?

Inventory as a Per Cent of Sales

Per Cent

120
110
100
90
80
70
60
50
40

Combines
Tractors

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CONGRESSIONAL INFO SERV
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Special review
starts on page 12

IMPLEMENT & TRACTOR

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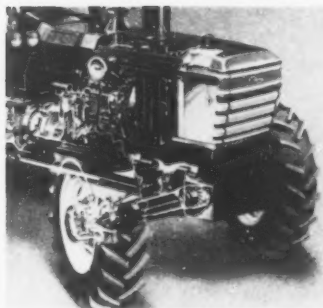


INTERTEC PUBLISHING CORP.

Implement & Tractor

The business magazine of the farm and industrial equipment industry

May 1984 • Vol. 99 • No. 7



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On the cover...The industry's effort to shed excess baggage moves slowly. Like weight-loss capsules, radical moves to cut inventory may produce side effects.

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I&T Update

Sales Strength in Big-Tractor Brackets

The March flash report from the Farm & Industrial Equipment Institute shows a continued mix of ups and downs. Four-wheel-drive tractor sales are continuing their pickup. Two-wheel-drive tractor sales

continue to show great strength in the over-140-hp group and weakness from 100-139 hp. Meanwhile, the improvement in 40-99 hp sales suggests to some observers that surging popularity of front-wheel-

assist may be contributing to all three movements. Sales of under-40-hp fell off in March, but March of 1983 had produced a big surge over 1982 volume in that bracket.

The flash report:

	Unit Retail Sales					
	March			January-March		
	1984	1983	Pct. Change	1984	1983	Pct. Change
Farm Wheel Tractors:						
2-wheel drive						
Under 40 hp	4,189	4,712	-11.1	8,997	9,086	-1.0
40-99 hp	3,693	3,194	+15.6	9,485	8,258	+14.9
100-139 hp	983	1,176	-16.4	2,309	3,598	-35.8
Over 140 hp	1,288	854	+50.8	3,522	2,313	+52.3
Total 2-wheel drive	10,153	9,936	+ 2.2	24,313	23,255	+ 4.5
4-wheel drive						
Under 200 hp	165	145	+13.8	436	406	+ 7.4
Over 200 hp	349	245	+42.4	762	568	+34.2
Total 4-wheel drive	514	390	+31.8	1,198	974	+23.0
Total All Tractors	10,667	10,326	+ 3.3	25,511	24,229	+ 5.3
S-P Combines	306	602	-49.2	2,012	3,106	-35.2
Balers (under 200-lb. bales)	553	515	+ 7.4	1,149	1,231	- 6.7
Forage Harvesters (shear-bar type)	136	158	-13.9	363	475	-23.6
Mower-Conditioners	899	809	+11.1	1,891	1,779	+ 6.3

MF Cuts Losses To \$68 Million

Massey-Ferguson Ltd. has reported a net loss for the fiscal year ended Jan. 31, 1984, of \$68 million. A news release from MF compares this with a net loss of \$413 million for the fiscal year ended Oct. 31, 1982. The company had changed its year ending from the last of October to the last of January.

Total sales were \$1.535 billion, down 25 per cent from \$2.058 billion in fiscal 1982. Sales in 1983 did not include deconsolidated subsidiaries in Argentina and Brazil. Farm and industrial equipment sales

were off 22 per cent at \$1.292 billion; diesel engine sales of \$243 million were off 39 per cent.

In North America, sales were down 3 per cent at \$492 million; European volume fell 15 per cent to \$667 million; sales in Asia, Africa and Australasia were off 27 per cent at \$339 million; sales in Latin America were \$37 million, down from \$304 million.

The three months ended Jan. 31, 1984, produced sales of \$362 million, up 16 per cent. The period's net loss was \$27 million compared with \$94 million in the same three months a year earlier.

World Tractor Sales, Output Estimated

Writing in the March, 1984, issue of Britain's *Agricultural Machinery Journal*, Dr. Sandro Mangosi estimates that tractor sales outside the Communist economic bloc fell from 816,700 units in 1976 to 648,900 in 1982, a 20 per cent drop.

Dr. Mangosi, formerly a Massey-Ferguson market

research manager and now SAME Trattori's marketing manager, presented a table estimating 1982 tractor production, worldwide, by "major" company, thus:

Massey-Ferguson, 104,000; Fiat, 82,000; Ford, 73,000; International Harvester, 70,000; Deere, 62,000; Deutz, 25,000; SAME, 25,000; Case, 21,000; Fendt, 15,000; Volvo/Valmet, 14,000; Renault, 13,000; Steyr, 11,000.

Briefly...

John N. Chuchman, marketing manager of Ford Tractor's North American sales operations, has been named Agricultural Marketer of the Year by the National Agri-Marketing Assn.

International Harvester Co. has sold a telecommunications system, whose voice and data services it once intended to put on the open market, to ICOM, Parsippany, N.J.

Canadian Sales: Tractors Up, The Rest, Down

Canada's tractor sales in the first quarter of 1984 showed a unit sales increase of 11 per cent—from 3,227 to 3,653. Four-wheel-drive units improved by 18 per cent to 606 units, but over-100-hp, two-wheel-drive models were off 16 per cent. The major surge was felt in the 40-99 horsepower bracket—up 29 per cent to 1,618 units. Tractors under 40 hp went up 20 per cent to 508 units.

Allis-Chalmers '83: Sales of \$512 Million

Allis-Chalmers Corp.'s annual report has indicated that 1983 sales of agricultural and material handling equipment were \$512 million, compared with \$603 million in 1982. The corporation's total sales were \$1.3 billion compared with \$1.61 billion in 1982.

Loss before income taxes by the agricultural and material handling equipment segment was \$36 million compared with \$152 million in 1982. In addition, finance expense for the segment was \$71 million; in the previous year, it was \$89 million.

The over-all company experienced a loss of \$119 million, compared with a loss of \$235 million in the previous year.

Search for Oldest MF Tractor Is Launched

In 1983, Allis-Chalmers launched a search for the oldest working Gleaner combine. Now, Massey-Ferguson is conducting a worldwide search for the oldest working MF tractor. It's part of a commemoration of the 100th birthday of Harry Ferguson, inventor of the Ferguson system, and the 50th anniversary of the first prototype tractor using the system.

Owner of the oldest Ferguson in the U.S. will win \$1,000, a 34-hp MF 240 tractor and a trip to Toronto and to the Smithfield Agricultural Exhibition in London next December.

Sales of self-propelled combines were up 6 per cent for the quarter to 298 units, but March was down severely, from 93 units in 1983 to 45. Declines were also noted in other product categories for the first quarter: pull-type combines, down 31 per cent at 135 units; small balers, off 5.6 per cent at 255; big balers, off 17 per cent at 258; mower-conditioners, down 19 per cent at 224; forage harvesters, down 59 per cent at 43; pull-type swathers, down 30 per cent at 108; self-propelled swathers, down 14 per cent at 208.

Editor's Notebook

(continued)

Well, those are terrible one-liners, aren't they! If Butrick were here, he'd tell me to consider selling my comedy act.

Actually, I may be clowning on this selling-out business to keep from crying. I have mixed feelings about splashing Butrick's list around so liberally. He's been doing this kind of consulting for many years and his observations deserve some attention and consideration.

But in the context of today's troubled farm equipment business, when I read Butrick's remarks, however astute they are, I have an emotional reaction—sadness—rather than an intellectual one. Talk of selling out suggests to me that there is a collapsing need for farm equipment dealers (and small manufacturers) and that such business owners are best off unloading fast, salvaging what they can and finding something else to do. It's just my gut reaction, and it's unfair, because Butrick's points are generally pertinent whether the economy is good or bad, expanding or contracting.

Frankly, I'm one of the ones who is beginning to feel that there are not enough farm equipment dealers out there—not enough to take care of the

machinery needs of farmers in a true sense, not enough to capitalize on the real power equipment opportunities that exist.

Yes, I know about the troubles everybody has been having. I know about dealer attrition and marketing costs and reduced demand for tractors and farm income problems.

But I also know about the mass merchandisers who took over so much of the farm equipment parts business without a great struggle on the part of manufacturers and dealers. If the parts distribution and marketing job had been getting as much attention as it deserved, and farmers' true needs in this regard had been met, there would be a lot more sustaining cash coming into this business today.

I also know that it's possible to run a dealership service department profitably, but that many dealers don't, or didn't. If service operations had been a higher concern of manufacturers and had been managed properly by more dealers—again, meeting farmers' true machinery needs—there would be more income and less attrition.

And I also feel that some of the dealer attrition of the last year or two

is less a result of soft demand itself than of manufacturers misjudging the mood of farmers and farm bankers, and grossly overproducing for the market. Hard times would surely have taken out some dealers. But without the horrible draining-off of cash from this whole industry to pay the interest on all that debt, many other dealerships and many jobs could have been saved.

Anyone else I should take a whack at? Bankers? That would take too long, so I'll save it for some other time. How about myself?

Okay: I've been told a time or two that in this column I pussyfoot too much on some issues. If that's true, and if I have thereby contributed to unnecessary dealer attrition in any way, I apologize. At this point, I hereby lob the ball into the reader's court and ask for your opinions: Have there been more dealership wipeouts than economic conditions warrant? Should manufacturers be diverting more money to building up their dealer organizations, both qualitatively and quantitatively?

If you feel like responding, write me at Box 12901, Overland Park, Kan. 66212, or phone me at 913/888-4664.



AUCTION PRICES OF USED EQUIPMENT

An exclusive I&T monthly report of actual prices paid recently at these leading national wholesale auctions.

Asterisk beside tractor price indicates highest bid offered on tractors which were not sold.

YODER & FREY, INC. Archbold, Ohio March 12, 1984

INTERNATIONAL HARVESTER TRACTORS

B, 1947 (Fair)	450
Sup. A, 1947 (Rough)	725
Sup. A, 1948 (Rough)	1025
184, 1976 (Fair)	2800*
H, 1943 (Rough)	425*
H, 1950 (Fair)	900
H, 1949 (Rough)	475
H, 1946 (Fair)	800*
H, 1949 (Rough)	1000
H, 1941 (Fair)	500
SH, 1952 (Rough)	600*
SH, 1952 (Good)	1225*
M, 1952 (Fair)	975
M, 1952 (Fair)	1050
M, 1947 (Fair)	950
M, 1948 (Rough)	425
Sup. M, 1948	875
W6, 1950 (Rough)	600

140, 1960 (Fair)	3300
140, 1972 (Fair)	2450*
100, 1955 (Fair)	2500
100, 1955 (Fair)	2440
300, 1955 (Rough)	725
354, (Fair)	1250*
Sup. C, 1953 (Fair)	975
400 diesel, 1954 (Fair)	675
400, .957 (Fair)	1000
450 diesel, 1958 (Rough)	800*
450, 1957 (Rough)	775*
454, 1972 (Fair)	2250
460 diesel, 1960 (Fair)	1700
560, 1960 (Rough)	1600*
560 diesel, 1961 (Good)	2775*
560, 1959 (Fair)	1500
560, 1962 (Good)	2200
560, 1958 (Fair)	1800
560, 1960 (Fair)	1850*
560 diesel, 1961 (Fair)	1900*
560, 1959 (Rough)	1550*
656, 1968 (Fair)	2700*
656, 1969 (Fair)	3400
656, 1970 (Good)	3200*
706, 1965 (Fair)	3850
706, 1965 (Good)	3800
706, 1964 (Fair)	2100

706 diesel, 1964 (Good)	4600*
706 diesel, 1966 (Fair)	3200
706, 1964 (Fair)	1700*
756, 1968 (Good)	3750
766 diesel, 1974 (Fair)	4700
786, 1976 (Fair)	6700
806 diesel, 1965 (Fair)	5850
806 diesel, 1969 (Good)	5400
806, 1964 (Rough)	4150
806, 1963 (Fair)	4300*
806 diesel, 1967 (Fair)	3750
826 diesel, 1970 (Fair)	6600
856 diesel, 1969 (Good)	6900
856 diesel, 1969 (Good)	6500
856, 1970 (Good)	6100*
856, 1967 (Fair)	5600
856 diesel,	6500
856, 1970 (Fair)	6200*
856, 1971 (Good)	6300*
856 diesel, 1970 (Good)	5750
884, 1976 (Good)	11,750
966, 1973 (Fair)	5250*
986, 1978 (Fair)	11,000*
1066, 1972 (Fair)	8400
1066, 1974 (Good)	7250
1066, 1975 (Good)	8550
1066, 1975 (Fair)	6650

1066, 1975 (Rough)	4100*
1066, 1971 (Fair)	7800
1086, 1977 (Good)	17,000
1086, 1976 (Good)	12,800*
1086, 1977 (Good)	12,800*
1086, 1979 (Excellent)	14,600
1206, 1966 (Good)	6350
1206 diesel, 1964 (Fair)	4600*
1206 diesel, 1966 (Fair)	5850*
1206, 1964 (Fair)	4100
1256, 1970 (Rough)	4750*
1256, 1970 (Good)	6400
1456, 1970 (Good)	7375
1456, 1971 (Rough)	5200
1456, 1967 (Fair)	5300*
1456 diesel, 1969 (Fair)	5500
1466, 1972 (Rough)	4700*
1466, 1976 (Good)	10,500*
1466, 1972 (Fair)	8100*
1466 diesel, 1972 (Fair)	7000
1566 diesel, 1973 (Good)	8250*
1566, 1975 (Fair)	10,000*
3588, 1980 (Good)	15,900*
3588 diesel, 1979 (Good)	18,000*
3088, 1982 (Excellent)	18,000*

(Continued on page 40)

Reviewing Major Inventories

They've been trimmed, but not as fast as sales have fallen. How successfully does discounting cut the real burden of carrying inventory? By Bill Fogarty

■ "WHAT!," cried the man with whom I was sharing a taxi. "You mean they haven't cleaned that inventory up yet? What have they been *doing* in your industry?"

This man and I had discovered that we were both headed from the Atlanta airport to a major conference-exhibition of the fasteners industry, and we had begun talking shop. He took the news about the high inventories of the farm equipment industry to heart, for he had hoped to sell some nuts and bolts, or whatever, to tractor makers in 1984.

By the time you read this, perhaps we'll all know if that fastener man can smile again sometime in the foreseeable future. Meanwhile, supply levels are generally well beyond demand in many high-ticket equipment areas.

The big table on the opposite page provides a quick glimpse of how it's been going over the past 21 quarters with regard to the inventory of major machines. Each December has its own color, each March, etc., so you can compare easily on a year-to-year basis for each quarter.

In addition, we invite your inspection of the table below. This one indicates the relevance of the inventory levels, for it briefly relates them to sales.

How can it be?

Inventories staying so high produce plenty of grief and anxiety, but also astonishment. Many people,

like the man in the taxi, wonder how companies can keep producing in the face of a pre-existing glut. It seems simple enough: If more tractors roll off the factory line, or are lifted off the deck of a container ship, than roll off the dealer's truck into a farmyard, inventory will go up. And so will profit-robbing interest payments. So the trick would seem to be, just don't make any more.

But there are complications. The obvious one is an unexpected drop in demand or the failure of an expected upturn to materialize. Such situations are made more difficult when production schedules are cast in concrete far in advance. With imported machines, commitment to produce is established even earlier.

Another complication might be that the models/options that are the bright sellers in an otherwise dreary marketplace aren't the ones the experts expected to be hot. Case in point:

Another article in this issue tells of the big surge in market share of tractors with mechanical front-wheel drive. Would you have believed that about 10 per cent of the 100 to 140 horsepower units sold in the U.S. last year would go with front-drive systems on them? I would have underestimated the demand, and I'll bet some others actually did. Meanwhile, conventional versions may have gathered dust.

There was an article in the Mar. 29 *Wall Street Journal* about cur-

rent inventories in American business. It told how low inventories are in many fields—bicycles, tires, autos—and low by design, too. Many businesses are saving big money in interest and storage costs by keeping the lowest inventory-to-sales ratios in more than a decade, thanks to computer advancements.

But, the article tells us, the big test is still to come. Shortages might erupt by mid-year and this will test the resolve of executives. One of the perils is that if they yield to pressure to build up inventory so as not to miss out on increasing demand, there could be a scramble for supplies, heavier borrowing, and a rise in prices and interest rates.

For somebody in the farm equipment industry, it has a far-away ring to it. It's a world only dimly remembered for veterans of this business. There was heavy borrowing, a scramble for supplies and rocketing inflation back in 1973 and 1974. The industry's leaders didn't understand at the time that their resolve was being tested (but neither did anyone else) and inventory growth in relation to demand really got rolling.

The capsule box

To symbolize the farm equipment industry's desire to trim excess inventory, I&T purchased a box of over-the-counter appetite control capsules, photographed it and placed it on the cover of this issue.

These capsules are intended as a
(More...)

Inventory as a Per Cent of Sales

Year	Tractors (40 HP and over)			Self-Propelled Combines		
	Average Inventory	Sales	Inventory as a Pct. of Sales	Average Inventory	Sales	Inventory as a Pct. of Sales
1979	67,693	138,990	49	13,969	32,246	43
1980	75,777	119,336	66	13,713	25,741	53
1981	79,960	103,835	77	16,442	26,831	32
1982	77,170	70,381	110	16,168	16,205	100
1983	66,937	66,237	101	14,187	12,751	111

Source: Farm & Industrial Equipment Institute Retail Sales Reports, 1979-1983

Industry Inventories, Dec. 31, 1978-Dec. 31, 1983
Farm Tractors 40 HP and Over

Last Day of	40-99 HP	100 HP & Over	4-Wheel Drive	Total Tractors	S-P Combines
Dec., 1978	32,501	26,504	4,723	63,728	9,161
Mar., 1979	33,712	27,845	4,945	66,502	13,712
June, 1979	31,893	25,612	5,096	62,601	17,454
Sept., 1979	34,192	30,017	6,286	70,495	16,370
Dec., 1979	37,881	27,197	6,098	71,176	8,339
Mar., 1980	46,689	27,185	6,561	80,435	10,950
June, 1980	44,468	28,276	7,029	79,773	15,665
Sept., 1980	40,072	24,791	7,326	72,189	16,167
Dec., 1980	38,115	25,125	7,470	70,710	12,070
Mar., 1981	38,442	29,998	8,534	76,974	14,780
June, 1981	40,644	32,523	8,472	81,639	19,509
Sept., 1981	40,275	33,260	7,707	81,242	18,773
Dec., 1981	38,445	34,850	6,695	79,986	12,704
Mar., 1982	40,660	34,406	6,418	81,484	15,259
June, 1982	36,879	37,846	6,319	81,044	18,473
Sept., 1982	31,812	36,515	6,287	74,614	18,233
Dec., 1982	29,743	36,357	5,421	71,539	13,717
Mar., 1983	29,051	35,463	5,519	70,033	13,335
June, 1983	28,028	33,677	5,100	66,805	15,671
Sept., 1983	26,957	33,279	4,635	64,871	14,854
Dec., 1983	29,729	32,092	4,219	66,040	12,888

*From March, 1980 through December, 1981, 90-99 HP inventories were combined with the over-100-HP group.
Source: Farm & Industrial Equipment Institute, Retail Sales Reports, 1978-83.



If you're looking for a saw chain that'll perform as well at the sales register as it does on the job, Stihl's the One. The new Stihl® 63 PM1 chain is the latest of our professionally designed saw chains. It was engineered to give your customers the reduced kick-back they're looking for—without reducing cutting speed or power. And it will fit any competitive saw, 2.5 cu. inch or below, which uses a 3/8 inch extended pitch chain. Available in pre-cut loops or reels, Picco-Micro 1 is another reason you can say to your customers: when it comes to saw chain, Stihl's the One. **STIHL®**
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Write in (7) on Reply Card

Inventory Review (continued)

means to the end of losing excess weight. And so, since we're talking about symbols, we could look on those capsules as the equivalent of discounting—a means to the end of trimming surplus iron in this business, right?

If you read the back of the package, you find that the folks who make these capsules have some good advice:

"Do not use if you have high blood pressure, diabetes, heart, thyroid, kidney or other disease or are being treated for high blood pressure or depression or are under 18 or over 60....Do not take if you are presently taking another medication containing phenylpropanolamine, or any type of nasal decongestant drug..., etc."

There's more, but you get the idea: Some medicine carries with it the risk of side effects.

And there are people who will tell you that there are dangerous side effects that can result from excessive use of discounting as a means of trimming inventory.

One of them, frequently cited in these pages, is the pain that such practices inflict on the discounting manufacturer's dealer organization, particularly when almost all dealers have a fairly generous supply of used equipment on hand. Used equipment piles up as discounting progresses, while the per-unit value of the equipment goes down.

The discounting manufacturer, through his captive credit company, usually has to get involved in this used equipment, for the farmer and retailer usually have worked out a deal in which little or no cash is seen.

Thus, while the new machine is safely off the inventory log, there's another one, used, that's added. And to make a deal these days, discount notwithstanding, the dealer has to give a lot for the used machine.

And thus, our tables with this article give only a partial insight as to how the inventory struggle goes. If we were to get the full picture, we would have to have some impossible-to-get numbers: Number of new machines flooded by and for the manufacturer, and their value, plus the number of used machines involved, along with the amount of flooring involved. 

1. Market share takes a big jump

While most of the tractor sales environment had the blahs in 1983, those units with power front axles really began to blossom. **By Scott Nesbitt**

■FRONT-WHEEL assist has apparently gone beyond the "passing fancy" stage, to become a major force in the tractor market.

The figures shown are an average of estimates made by several tractor manufacturers to I&T, all of whom had seen an "industry insider's" report on the FWA share of two-wheel-drive tractor sales. No formal public report is issued on the subject.

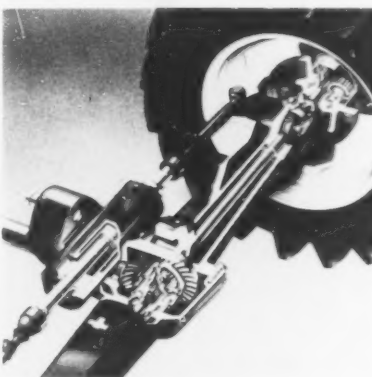
Market Share of FWA Tractors
(percent of sales)

	1978	1980	1983
Under 40 hp	30	38	47
40-99 hp	3.5	7.5	15
100-119 hp	1.5	2.1	9.5
120-139 hp	1.6	2.3	10.8
140 hp plus	1.1	2.3	25.5

Why the sudden surge in FWA sales when tractor sales in general were weak?

Gary Morten, sales support manager for White Farm Equipment, says the weather has a lot to do with it.

"You get a series of wet springs in a region, and the sales trend goes upward," Morten said. "Then once a farmer has front assist, he's very likely to keep buying that kind of



tractor when it's time to trade."

Morten acknowledges that research studies on FWA find it's often hard to justify the FWA option from a strict cost-benefit standpoint, based on performance tests and fuel efficiency.

"Fear of loss is a big buying motivation," he commented. "A powered front axle is cheap insurance, especially if it could mean the difference between getting a crop in, or having to wait. A lot of the buying is spur-of-the-moment."

White Farm Equipment is the domestic pioneer of FWA, since the Oliver Corp., a White parent, introduced the 1800 and 1900 series in 1962 as the first factory-offered FWA tractors in the U.S.

In Europe and Japan, front-wheel assist tractors have held major market shares for a decade or more,

(Continued on page 45)

2. 'Keep your nose to the ground'

Here's what university and manufacturer engineers are saying about how strategic placement of ballast on FWA tractors can vitally affect the machine's performance.

■THIS COULD be the payoff question of the '80s:

How much extra performance does front-wheel assist give a tractor?

Your choice of answers:

1. Up to 19 per cent more.
2. Makes no difference.
3. Actually robs power.
4. Can't answer until performance is defined.
5. All of the above.

The correct answer is No. 5, if you believe the findings of various research reports and the experience of engineers who discussed FWA tractors recently with I&T.

Now the payoff: Here's a list of what engineers generally agree

on—things that make a FWA tractor perform at its best. For a dealer running a field demonstration, these are points that might make the difference between a sale and a wasted afternoon:

Ballasting should put 40 to 45 per cent of the tractor's static weight on the front end.

Tire size should be carefully matched to achieve a nearly equal ground speed between front and rear end.

Radial tires will give a slight edge in traction.

Tire tread should match soil conditions, with good tall lugs in soft soil, somewhat worn lugs in firm soil.

Engage the front drive during all field pulling work. Don't try to hold it in reserve for tight spots.

Implement hookup should work toward a low drawbar height, not the high drawbar sought with 2WD tractors.

Working speed should be high; don't treat the tractor like a crawler.

Wheel spacing should be equal front and back, so the front lays a firm path for the rear to walk on.

Avoid duals on the rear; they can actually cut traction.

Inflation pressures slightly below normal may help a bit.

Remember, the FWA tractor is not a 2WD or 4WD but something

(More...)

Auctions

(Continued from page 4)

CASE TRACTORS

530, 1965 (Fair)	1500*
530, 1964 (Rough)	1700
800, 1957 (Fair)	775
730, 1967 (Fair)	2900*
730, 1964 (Fair)	4100*
730, 1965 (Fair)	2000*
730, 1967 (Rough)	1600
830, 1966 (Rough)	1300
870, 1975 (Fair)	4800
930, 1966 (Fair)	1625
1030, 1965 (Good)	4800
1030, 1966 (Good)	4000
1070, 1972 (Fair)	4700
1270, 1976 (Fair)	6750
1370, 1977 (Fair)	6000
1470 TK, 1971 (Rough)	4900*
2390, 1982 (Good)	20,000*
2470, (Fair)	10,750
2670 diesel, 1972 (Rough)	11,000*
2670, 1975 (Good)	11,250*

COCKSHUTT TRACTORS

20, 1947 (Fair)	1175
1555 diesel, (Fair)	2400*

FORD TRACTORS

8N, 1948 (Rough)	1200
8N, 1950 (Fair)	1325
8N, 1952 (Rough)	1225*
9N, 1942 (Fair)	1100*
9N, 1945 (Fair)	1250
9N, ldr., 1942 (Fair)	1700
9N, 1942 (Fair)	935
NAA, 1954 (Fair)	1825
800, 1956 (Fair)	2625
3000, 1975 (Good)	4300
5000, 1973 (Fair)	5900
6000, 1980 (Rough)	1700

7000, 1974 (Fair)	6100*
8000, 1971 (Fair)	5500*
8000 diesel, 1973 (Fair)	5250
9600, 1975 (Fair)	5800
5610, (New)	12,900
4610, (New)	10,500*
860, ldr., (Fair)	2500
Sup. Maj., 1958 (Rough)	1625
Dexta, 1959 (Fair)	1425
960, 1957 (Fair)	1600
871, ldr., (Rough)	1300
850, ldr., (Good)	2600
Jub., 1953 (Fair)	1475
Jub., 1954 (Good)	2850
Jub., 1953 (Rough)	1300
Jub., 1952 (Fair)	2450
8700 diesel, 1977 (Good)	12,250*

ALLIS-CHALMERS TRACTORS

WD-45, 1952 (Rough)	500
WD-45, 1951 (Rough)	850
D-17, 1961 (Rough)	1550*
D-19, 1961 (Fair)	2050
D-21, 1967 (Fair)	4200*
190XT, 1970 (Fair)	4650*
190XT, 1970 (Good)	4900
190XT, 1970 (Fair)	3500
200, 1972 (Fair)	5500
200, 1973 (Good)	7200
200, 1971 (Fair)	4050*
200, 1972 (Good)	5650
200 diesel, 1972 (Good)	5650
210, 1971 (Good)	6100*
5040,	4100
7030, 1975 (Fair)	6150
7050, 1977 (Fair)	7500

FERGUSON & MASSEY-FERGUSON TRACTORS

TO-35, 1963 (Rough)	1700
35, 1960 (Fair)	1750
35, 1958 (Rough)	1425
50, ldr.	1150
65 diesel, 1960 (Fair)	1700*

65, 1961 (Fair)	1775
85, 1959 (Rough)	1300*
85, 1962 (Rough)	2000
135, 1967 (Rough)	2325
165, 1968 (Fair)	3800
165 diesel, 1967 (Fair)	3825
175 diesel, (Good)	3950
245 diesel, 1981 (Fair)	5300*
1105 diesel, 1974 (Fair)	5300
1130 diesel,	1900
1800, 1974 (Rough)	5750*
2675, 1980 (Good)	14,100

DAVID BROWN TRACTORS

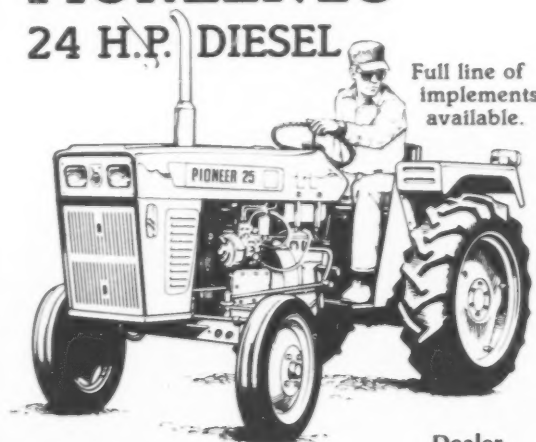
880, 1970 (Fair)	2600
1200, 1971 (Rough)	1850
1200, 1970 (Fair)	2575
990, 1962 (Fair)	1450
990, 1967 (Fair)	1950*

JOHN DEERE TRACTORS

A, 1952 (Fair)	475
A,	350
G, 1951 (Fair)	825
40, 1955 (Rough)	750
60, 1956 (Rough)	1075
60, 1953 (Good)	1850
70 diesel, 1953 (Good)	1075*
70, 1954 (Fair)	900*
70, 1953 (Rough)	700*
70, 1953 (Good)	1075*
50,	1050
M, 1948 (Rough)	750
620, 1957 (Rough)	1025
630, 1958 (Fair)	2150
720, 1957 (Fair)	1500*
720, 1957 (Rough)	1200*
720 diesel, 1957 (Fair)	1750
730, 1957 (Fair)	1500
730 diesel, 1959 (Fair)	1900
7300, 1957 (Rough)	1500
730, 1957 (Good)	2900*
950, 1978 (Excellent)	8000
1010, 1962 (Rough)	1800*

1010, 1962 (Rough)	1900*
1002, 1970 (Rough)	2875
2010, 1963 (Good)	3050
2010, 1962 (Fair)	2650*
2020, 1968 (Rough)	2725
2020, 1970 (Fair)	2200*
2030 diesel, (Fair)	2900*
2030, 1975 (Fair)	6300*
2510, 1966 (Good)	4000*
2840, 1979 (Good)	6700*
2840, 1979 (Fair)	8750*
3020, 1965 (Fair)	4000
3020, 1968 (Good)	5150
3020, 1968 (Good)	4200
4010 diesel, 1961 (Rough)	3775
4010, 1965 (Good)	4900
4010, 1963 (Fair)	3900*
4010 diesel, 1963 (Fair)	5000
4010 diesel, 1962 (Fair)	4150
4020, 1968 (Good)	7400
4020, 1964 (Good)	5600*
4020, 1966 (Fair)	2800*
4020, 1968 (Fair)	4500
4020, 1965 (Rough)	5000*
4020 diesel, 1967 (Fair)	5900*
4020 diesel, 1966 (Fair)	5200
4020, 1966 (Good)	6050*
4020, 1967 (Good)	6050
4020 1965 (Fair)	4200
4020 diesel, 1965 (Good)	6000*
4020, 1965 (Fair)	4150
4020, 1965 (Fair)	6800
4020, 1966 (Fair)	6050
4020, 1966 (Fair)	5250*
4020, 1970 (Fair)	7600*
4020, 1965 (Fair)	5800*
4230, 1976 (Good)	10,900
4230, 1975 (Good)	12,000*
4230 diesel, 1977 (Fair)	13,900*
4230 diesel, 1975 (Good)	11,900
4430, 1977 (Fair)	15,600
4430 diesel, 1975 (Fair)	12,900
4430 diesel, 1977 (Fair)	9500*
4430 diesel, 1976 (Fair)	10,000

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4430, 1976 (Fair)	12,800*
4440, 1978 (Good)	19,900*
4440, 1979 (Good)	19,300
4440 diesel, 1979 (Excellent)	22,000*
4520,	8350
4630, 1974 (Fair)	11,800
4630, 1974 (Fair)	8300*
5020, 1970 (Fair)	5700
6030, 1975 (Fair)	11,000
8630 diesel, 1975 (Good)	18,650*
2130, 1974 (Fair)	6400

OLIVER TRACTORS

60, 1950 (Rough)	260
88 diesel, 1950 (Fair)	800
88,	475
88, 1950 (Rough)	375
88 diesel, 1952 (Rough)	550
1600, 1963 (Fair)	2100
1650, 1965 (Fair)	2600
1650, 1965 (Rough)	2100
1650, 1967 (Fair)	3300
1800, 1962 (Fair)	1900*
1850 diesel, 1965 (Fair)	4000
1850 diesel, 1966 (Fair)	4825
1855, 1973 (Good)	6250
1855, 1971 (Good)	4950*
1950 diesel, 1964 (Rough)	2600
2150,	5050

MINNEAPOLIS-MOLINE TRACTORS

M-5, 1965 (Fair)	900
M-602, 1963 (Fair)	2050*
M-620, 1965 (Fair)	1950*
G-705, 1966 (Rough)	1400

MASSEY-HARRIS TRACTORS

30, 1941 (Rough)	275
44, 1949 (Fair)	700
44,	160

STEIGER TRACTOR

Bearcat, 1971 (Fair)	11,000*
----------------------	---------

WHITE TRACTORS

2-150, 1977 (Rough)	9000
4-180 diesel, 1975 (Good)	10,800
2-45, (Good)	9600*

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ALLIS-CHALMERS TRACTORS

190 diesel, 1970 (Fair)	3400
D19, 1962 (Rough)	875
G, mo., 1950 (Fair)	725

CASE TRACTORS

2870 diesel, 1978 (Excellent)	2300*
2090 diesel, (Good)	10,000*
1570 diesel, 1976 (Good)	8900
1370 diesel, 1974 (Good)	5000
970 diesel, 1975 (Good)	6700

DEUTZ TRACTOR

6806 diesel, (Good)	3900
---------------------	------

DAVID BROWN TRACTORS

1200 diesel, 1967 (Fair)	1650
770 diesel, 1965 (Rough)	675

MASSEY-FERGUSON TRACTORS

2705 diesel, 1979 (Good)	12,000
1155 diesel, 1974 (Fair)	3500
1130 diesel, 1968 (Good)	4125
1085 diesel, 1973 (Good)	4100*
1085 diesel, 1973 (Excellent)	5400
590 diesel, 1979 (Excellent)	5700*
590 diesel, 1979 (Excellent)	5850
275 diesel, 1976 (Good)	6000
275 diesel, 1975 (Good)	5200
265 diesel, 1977 (Good)	6200
235 diesel, 1976 (Excellent)	5150
175 diesel, 1973 (Fair)	2500

175 diesel, 1971 (Fair)	2400
165 diesel, 1972 (Fair)	3400
165 diesel, 1972 (Good)	3800
165 diesel, 1968 (Good)	3200*
165 diesel, 1966 (Fair)	2400*
135 diesel, 1970 (Good)	3550
135 diesel, 1966 (Good)	3300
135 diesel, 1966 (Rough)	1400
65 diesel, 1964 (Rough)	1000
65 diesel, 1963 (Rough)	1100*
40, 1956 (Good)	1225
35, 1956 (Fair)	1125
TO30, 1952 (Fair)	1075
TO30, 1952 (Good)	375

FORD-FERGUSON TRACTOR

9N, 1946 (Good)	1250
-----------------	------

FORD TRACTORS

7000 diesel, 1975 (Good)	4850*
5000 diesel, 1971 (Good)	4400
5000 diesel, 1970 (Fair)	4150
5000 diesel, 1969 (Good)	3700
5000 diesel, 1969 (Fair)	3500
5000 diesel, 1968 (Fair)	3400
5000 diesel, 1968 (Rough)	2700*
5000 diesel, 1968 (Rough)	2550*
5000 diesel, 1968 (Fair)	3500*
5000 diesel, 1968 (Fair)	2925
5000 diesel, 1968 (Rough)	1525*
5000 diesel, 1968 (Fair)	3300
4600 diesel, 1976 (Excellent)	5000
4600 diesel, 1976 (Excellent)	5700
4000 diesel, 1974 (Excellent)	4900*
4000 diesel, 1972 (Good)	4100
4000 diesel, 1968 (Fair)	2700
3000 diesel, 1970 (Excellent)	3850
3000, 1969 (Excellent)	4175
3000 diesel, 1968 (Good)	3600
3000 diesel, 1966 (Good)	3200
3000, 1966 (Rough)	2250
3000 diesel, 1966 (Rough)	2300
3000 diesel, 1966 (Fair)	3000*

3000 diesel, 1966 (Fair)	3300*
3000 diesel, 1966 (Rough)	1600
2000, 1966 (Good)	2600
2000, 1966 (Good)	2725*
641, ldr., 1959 (Rough)	1300*
NAA, 1954 (Excellent)	2700
Jub., 1953 (Good)	1800*
8N, 1952 (Excellent)	1807
8N, 1952 (Excellent)	1975
8N, 1952 (Excellent)	1875
8N, 1952 (Good)	1600
8N, 1952 (Excellent)	2000

INTERNATIONAL HARVESTER TRACTORS

1568 diesel, duals, 1975 (Fair)	4100*
1086 diesel, 1977 (Good)	10,250
966 diesel, cab, 1975 (Good)	10,100
784 diesel, 1979 (Fair)	5700*
784 diesel, 1979 (Good)	7000
100 diesel, hydro, 1974 (Good)	5300
2300, (Good)	1750
684 diesel, 1978 (Good)	4900
666 diesel, 1973 (Fair)	2200*
574 diesel, 1973 (Good)	4350
574 diesel, 1972 (Fair)	3725
504 diesel, 1966 (Good)	3200
454 diesel, 1971 (Good)	3650*
404, 1964 (Rough)	385
300, 1955 (Fair)	600*
424, 1965 (Good)	1700
Cub, 1952 (Good)	1400
230, ldr., 1957 (Fair)	725
Cub, cult., pl., 1951 (Good)	1550
Sup. A, 1950 (Rough)	650
Sup. A, cult., 1954 (Good)	1750
B, mo., 1943 (Fair)	300

JOHN DEERE TRACTORS

4440 diesel, cab, 1979	
(Excellent)	22,000*
4430 diesel, cab, 1977	
(Excellent)	14,000

(More...)

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May 1984 Implement & Tractor 41

Auctions (continued)

4430 diesel, 1976 (Good)	10,000
4230 diesel, 1977 (Fair)	8500
4020 diesel, 1968 (Fair)	3400
4020 diesel, 1968 (Good)	4700
4000 diesel, 1970 (Good)	4000
3020 diesel, 1967 (Rough)	3000
2840 diesel, 1978 (Excellent)	7900*
2640 diesel, 1978 (Excellent)	7250*
2630 diesel, 1974 (Good)	4700
2630 diesel, 1974 (Fair)	4600
2630 diesel, 1974 (Fair)	2875*
2440 diesel, 1977 (Excellent)	7800
2130 diesel, (Good)	4950
2130 diesel, (Fair)	4100
2130 diesel, (Fair)	3550

1020, 1967 (Good)	3300*
1530 diesel, 1975 (Excellent)	4750
2010, 1963 (Excellent)	2500
430, 1959 (Good)	1100*
430, 1959 (Fair)	700
720 diesel, 1957 (Good)	950
M. cult., plow, 1948 (Fair)	675

LONG TRACTORS

360 diesel, (Fair)	2000
360 diesel, (Excellent)	3800

SATOH TRACTOR

Stallion, (Excellent)	4100
-----------------------	------

KUBOTA TFACTOR

L175 diesel, (Good)	3000
---------------------	------

NOTES:

Prices reported are for individual sales at wholesale on an "as is," "cash and carry" basis. Prices reported are not averages.

Condition Classifications:

EXCELLENT: Engine in perfect condition, 400 to 600 hours of use. Rubber—80% tread remaining, no breaks or cracks. Paint—original and bright. General appearance: excellent.

GOOD: Engine in good running condition. Rubber—70% tread remaining, no breaks or cracks. Paint—original or a good repaint job. General appearance: good over-all.

FAIR: Engine possibly in need of a minor overhaul. Rubber—60% tread remaining, some cracking evident in sidewalls. Paint—only fair, weathered and some rust apparent. General appearance: worn, some dents, minor parts (gage covers, etc.) missing or broken.

ROUGH: Engine obviously in need of a major overhaul. Rubber—smooth. Paint—scarred, weathered, rusty. General appearance: dents, ruptures, broken parts, loose wires, components (such as lights) broken, missing or inoperative.

Vegetable Oils (Continued from page 35)

Also, engine makers are reluctant to redesign engines for better operation with alternate fuels not now economical to use, and which may not become cost-effective for years. But some researchers insist that modifications must be made for alternate fuels to be developed and accepted, rather than modifying fuels to match current engines.

Changes being made to accommodate what some call the deteriorating quality of current diesel fuels may also improve engine performance when used with vegetable oil fuels.

Varying assumptions

Readers who examine research reports should do so carefully, particularly when comparing results to other studies. For instance, some reports at the Fargo conference included cost of new buildings in comparing on- and off-farm vegetable oil production. Other studies assumed that buildings were available on farms or that commercial production would be done in existing plants.

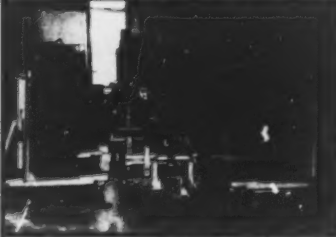
Some studies included an allowance for dollar and energy values of oilseed meal after oil extraction. Others ignored meal value completely. In some reports, projections were made on the basis of escalating diesel fuel prices and stable prices for vegetable oils, apparently ignoring the fact that crop output costs go up in relation to energy costs.

Increasing output

According to Lipinsky, et al, Battelle Columbus (Ohio) Laboratories, "It is technically feasible to manufacture oilseeds on a sufficient scale to permit manufacture of an additional 1-1.5 billion gallons, over and above domestic vegetable oil requirements and traditional export requirements." Most of this increased production would be expected to come from production of new crops and conversion of land from pasture and other uses. Such conversion would require a long time period, and as has been pointed out by other studies, it could result in severely increased erosion from marginal grazing land pushed into crop production.

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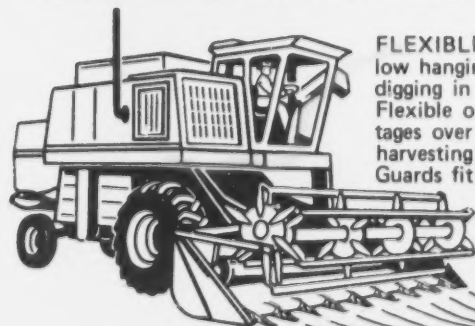
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Front-Assist Sales

(Continued from page 16)

a fact reflected in their sales in the U.S.

Deutz, from West Germany, gets about half its North American sales from FWA tractors, said Frank Kaplan, vice-president of marketing. Deutz limits its imports to the range of 50 to 150 pto hp, and to 30 Eastern U.S. states and three Western Canadian provinces.

"The biggest demand for front-assist is areas off the plains, in the moister areas of the country," Kaplan said. "Our marketing area overlaps the demand area, except that we don't get into California, where front-assist is strong."

Kubota, one of the earliest and largest Japanese importers, sells "considerably over 50 per cent" FWA tractors, according to Mike Fairless, a sales engineer. Kubota's strength is in the 40-and-under hp range, though it recently moved its line upward to 76 pto hp.

"We were in the FWA market early, and it's interesting that the FWA share of our sales has held relatively constant in the last three years," Fairless said. "I suspect that as other companies offer more FWA tractors, they will also get well above the 50 per cent mark before they also level off."

Stealing 4WD sales

Some interesting random comments about the FWA market from people who know something but didn't want their names used:

- "The big front-assist tractor is eating into the bottom end of the four-wheel drive market. The farmer can get something he's familiar with, that'll fit in his machine shed, that has a pto, that doesn't need a bunch of new implements."

- "In a few years, close to 50 per cent of all two-wheel drive tractors over 60 hp will be sold with front assist."

- "Now that everybody has it, look for a wave of technical innovation, detail refinements on the front end. The engineers are gonna have some fun for the next few years."

- "You'll probably see a lot more front assists that can't be disengaged. If you can send extra torque to the front end, you can boost engine horsepower without beefing up the rear end. A 70 hp rear end can handle a 100 hp engine, if the extra 30 goes to the front. We could have a new horsepower race."

- "A few years ago, the big domestic manufacturers gave a polite yawn when you mentioned front assist. That was something the Europeans did. It looks like the farmers were ahead of the game again. But if it's such a good idea, why didn't it catch on until now?"



More to Come

In the June I&T, watch for a report on how tires affect FWA performance, and what to do about it.

Research Credits

The following papers from the American Society of Agricultural Engineers discuss FWA tractors:

ASAE Paper 83-1560, "Performance of a Front Wheel Assist Tractor," by Gary R. Woerman and Leonard L. Bashford, U. of Nebraska, Lincoln.

ASAE Paper 83-1563, "In-Field Fuel Efficiency Comparisons of Various John Deere Tractors," by Ronald L. Jurek and Bruce C. Newendorp, Deere & Co., Waterloo, Iowa.

ASAE Paper 63-601, "Design and Performance Characteristics of Oliver Four-Wheel Drive Tractors," by H.K. Dommel and K.W. Race, Oliver Corp., Charles City, Iowa.

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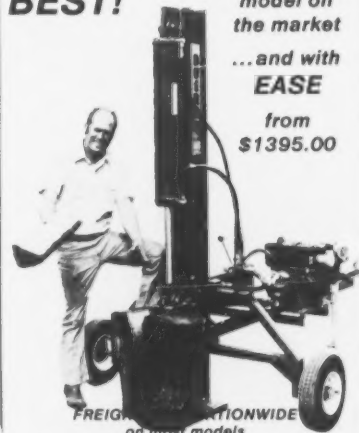
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